KEY TO APHIDS (HOMOPTERA, APHIDIDAE) FOUND ON LEGUMINOUS PLANTS IN AUSTRALIA

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Introduction

Recently two serious aphid pests of lucerne have been recorded in Australia for the first time. These are *Therioaphis trifolii* (Monell) f. *maculata*, the spotted alfalfa aphid, and *Acyrthosiphon kondoi* Shinji, the blue-green lucerne aphid. The former species is distinctive in its colouration and form but the latter is difficult to distinguish from a number of aphid species previously recorded on legumes in Australia and from *Acyrthosiphon pisum* (Harris), the pea aphid, which is present in New Zealand but as yet not detected in mainland Australia.

This key is designed to facilitate identification of the aphid species found on breeding populations on leguminous plants in Australia.

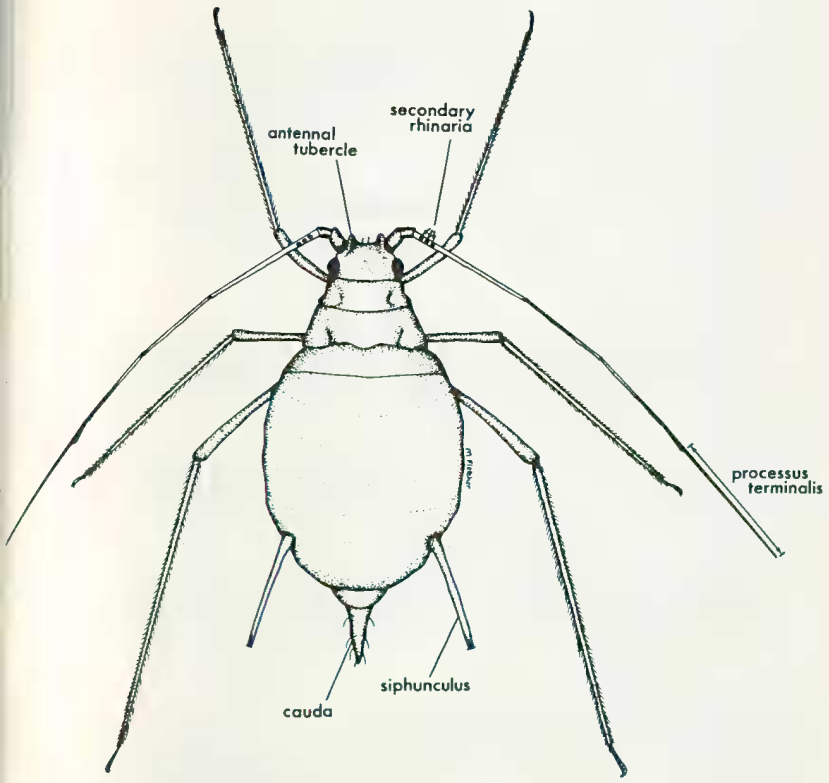


FIG. 1. *Acyrthosiphon kondoi* Shinji, apterous adult female.

Terms used

Aphid populations usually consist of viviparous adult females and nymphs. Oviparous females and males are rare and only occur in certain species. Viviparous females can be winged or wingless and are termed alatae viviparae and apterae viviparae respectively. The following key is for the identification of alatae viviparae and apterae viviparae. Fig. 1 explains the structural terms used in the key.

Apterae viviparae can be distinguished from nymphs by the development of the cauda, which in nymphs is relatively small and without apparent function.

A population that contains nymphs of all sizes and apterae, with or without alatae, is considered to be a breeding population. Alatae, and occasionally apterae, may be found feeding, and sometimes producing a few nymphs, on plant species other than their normal hosts. These are not considered to be breeding populations.

Key to aphids found on legumes in Australia

1. Root feeders (alatae occasionally on aerial parts of plants); siphunculi absent; cauda minute; wing veins simple; antennae 1/6 to ¼ of body length; rarely encountered . . . . . *Smynthurodes betae* Westwood "Bean Root Aphid"

— Feeding on aerial parts of plant; siphunculi present; cauda usually prominent; at least one wing vein branched; antennae at least ½ length of body 2

2. Characteristically coloured; yellow with rows of black spots or patches on thorax and abdomen, each bearing one or more black knobbed hairs; siphunculi very short, much wider at base than at apex, about as long as wide at base; common, recently introduced . . . . . *Therioaphis trifolii* (Monell) f. *maculata* "Spotted Alfalfa Aphid"

— Not coloured as above 3

3. Cauda semicircular or pentagonal, short; siphunculi short, about twice as long as broad at base (Fig. 2); very occasionally on legumes . . . . . *Brachycaudus helichrysi* (Kaltenbach) "Plum Aphid"

— Cauda triangular or elongate; siphunculi usually much longer 4

4. Antennal tubercles not, or only slightly, developed (Fig. 3) 5

— Antennal tubercles prominently developed (Figs 4, 7) 6

5. Cauda pointed apically, black; apterae black dorsally; common on legumes ..... *Aphis craccivora* Koch "Cowpea Aphid"

– Cauda rounded apically, pale or dusky; apterae pale dorsally, occasionally recorded on legumes ..... *Aphis gossypii* Glover "Cotton Aphid"

6. Siphunculus with band of polygonal reticulation covering apical ⅛ to ¼ (Figs 5, 6), this portion also slightly narrower than unreticulated portion; occasionally on legumes 7

– Siphuncular surface of even texture throughout 8

7. Siphunculi pale at base (Fig. 5) ..... *Macrosiphum euphorbiae* (Thomas) "Potato Aphid"

– Siphunculi completely dark (Fig. 6) ..... *Macrosiphum* (*Sitobion*) *miscanthi* (Takahashi) "Grain Aphid"

8. Cauda short, triangular; head rugose or spinulose (use high magnification) (Fig. 7); apterae without secondary rhinaria on antennae; alatae with black patch on abdomen 9

– Cauda elongate, triangular; head smooth (Fig. 4) or spinulose; apterae with 1-7 secondary rhinaria in a row on antennal segment three; alatae with abdomen pale dorsally or with transverse bars 10

9. Siphunculi cylindrical (Fig. 8), occasionally on legumes ..... *Myzus ornatus* Laing "Ornate Aphid"

– Siphunculi clavate (Fig. 9), occasionally on legumes ..... *Myzus* (*Nectarosiphon*) *persicae* (Sulzer) "Green Peach Aphid"

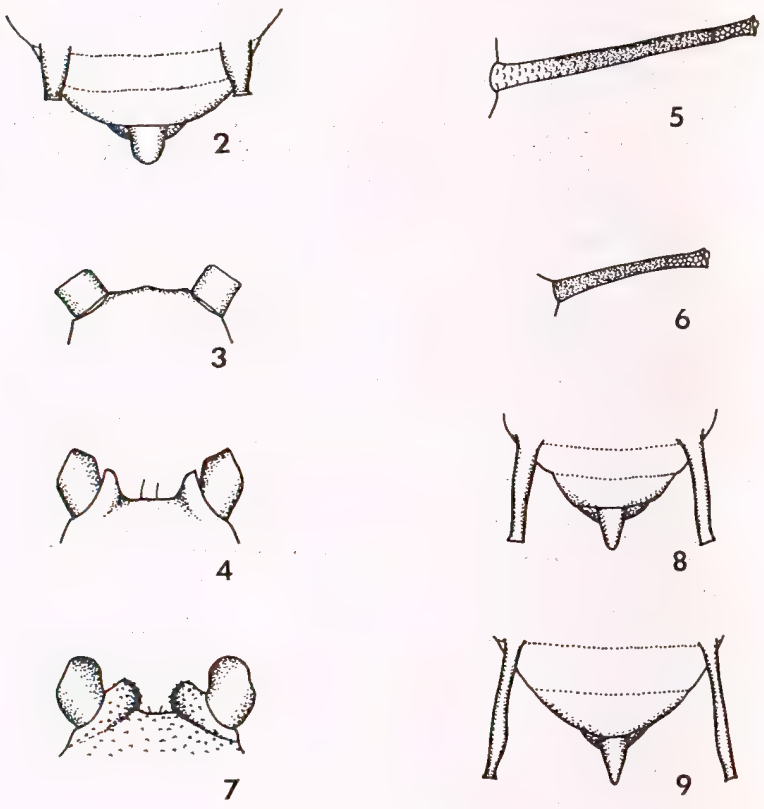
10. Blue-green colour in some lights; siphunculi dusky at apex, otherwise pale; antennae in apterae dark from apex to distal ¼ of segment 5, in alatae dark from apex to half length of segment 3, proximally pale, siphunculi thicker than antennal segment 3, processus terminalis 5-5.2 times as long as the base of antennal segment 6; antennal tubercles diverging, giving a U-shaped area between; common; recently introduced (Fig. 1) ..... *Acyrthosiphon kondoi* Shinji "Blue-green Lucerne Aphid"

– Green in colour; siphunculi black at apex; antennae in apterae and alatae with apex of each segment dark giving banded appearance; other characters not all as above 11

11. Siphunculi thicker than antennal segment 3, relatively short with well-formed apical flange, pale except for dark apex; antennal tubercles parallel-

sided; head (under high magnification) spinulose dorsally and ventrally; alatae with dark, irregularly-shaped, transverse segmental bands; polyphagous, frequently on legumes . . . . . *Acyrthosiphon* (*Aulacorthum*) *solani* (Kaltenbach) "Foxglove Aphid"

– Siphunculi as thick as or thinner than antennal segment 3, relatively long and thin; antennal tubercles diverging giving V-shaped area between; head (under high magnification) not spinulose, smooth; alatae pale, without markings; as yet not recorded from mainland Australia . . . . . *Acyrthosiphon pisum* (Harris) "Pea Aphid"



FIGS 2-9. (2) *Brachycaudus helichrysi* (Kaltenbach), apex of abdomen, dorsal view; (3) *Aphis craccivora* Koch, front of head, dorsal view; (4) *Acyrthosiphon kondoi* Shinji, front of head, dorsal view; (5) *Macrosiphum euphorbiae* (Thomas), siphunculus; (6) *Macrosiphum* (*Sitobion*) *miscanthi* (Takahashi), siphunculus; (7) *Myzus ornatus* Laing, front of head, dorsal view; (8) *Myzus ornatus*, apex of abdomen, dorsal view; (9) *Myzus* (*Nectarosiphon*) *persicae* (Sulzer), apex of abdomen, dorsal view.